The CLEANED approach for flagging and addressing environmental issues

Notenbaert, A; Paul, B; Van der Hoek, R; Mukiri, J.
Alliance Bioversity-CIAT, Tropical Forages Program
CONTACT: a.notenbaert@cgiar.org

Challenge

» Livestock provide food, nutrition, income, insurance, soil nutrients to millions of millions of smallholders across Africa, Latin America and Asia.

» Livestock systems are drivers of global environmental degradation and predicted demand increase for animal sourced food poses a sustainability challenge, particularly as many ecosystems are already under heavy pressure.

» Efforts to maximize livestock production, productivity and profitability thus need to be balanced with long-term sustainability and environmental stewardship.

A survey on livestock and environment

- Researchers, development practitioners and policy makers all agree that livestock production systems are at risk of global environmental change while at the same time contributing to it.
  - Major risks are perceived to be climate-related.
  - Major impacts were considered to be land-related (degradation and competition for land), closely followed by pressure on water and GHG emissions.
- Most promising approach towards reducing environmental impact brought forward was more sustainable livestock production practices (incl. managed grazing, improved pastures, silvopastoral systems and planted forages).
  - Barriers to uptake of such solutions: lack of rapidly available, site- and system-specific knowledge about such solutions and their potential environmental impacts.
  - Sources of information: The importance of journal papers, however, decreased as an information source from researchers to policy makers to development practitioners, while the use of professional networks and internet searches increases for the latter two groups.

The CLEANED framework and tool

- An indicator framework and associated user-friendly tool for ex-ante assessments of environmental impacts of development interventions in livestock Value Chains.
- It evaluates land requirements, productivity, water use, soil health, economics and greenhouse gas emissions associated with livestock production enterprises.
- It compares the environmental impacts of different livestock production practices in different livestock production systems.

Table 1. Environmental trade-offs following integrated packages in dairy systems of Muheza and Hai, Tanzania.

Farms	Land requirements		Soil impacts			Water impacts			GHG emissions		
	ha/yr	ha/MT FPCM	% Soil mining	Erosion (t soil/ha/yr)	Erosion (kg soil/kg FPCM)	m^3/year	m^3/kg FPCM	m^3/kg protein	t co_2eq/ year	kg co_2 eq/kg FPCM	kg co_2 eq/kg protein
Intensive dairy muheza highland	--	+++	+++	++	++	+++	+++	++	---	+++	++
Intensive dairy muheza lowland	+	+++	++		+++	+	+++	++	+	+++	++
Intensive Dairy hai	---	+++	+++	+	+++	---	+++	+++	---	++	++

Mwema et al, 2021

Usefulness of CLEANED

- The CLEANED indicators align with the concerns raised by global experts.
- The system-specific footprint calculations and assessments of environmental footprint changes of promising solutions, fills the knowledge gap identified by the experts, i.e., system-specific knowledge about such solutions.
- Results can provide input in investment decisions of local implementers, both in the private and public sphere.

Implications

Important to take a participatory approach and present results in multi-stakeholder forums and targeted internet posts.

Further reading

- Alliance's tools and innovations: CLEANED https://alliancebioversityciat.org/tools-innovations/cleaned
- CLEANED Workbook https://cleanedtraining.netlify.app/
- Dataverse - CLEANED X - Version 3.0.1 https://doi.org/10.7910/DVN/4EB5XT

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